## REMARKS

Applicant has carefully reviewed the Official Action dated April 21, 2008 for the above identified patent application.

At page 2, paragraph 1 of the Official Action, the Examiner has objected to the drawings on the grounds that they fail to show "main power supply means", "flush medium", and "computer means" as described in the specification.

Applicant respectfully disagrees with this basis for objection to the drawings on the grounds that these features of the invention, in fact, are illustrated by the original drawings currently on file.

More specifically, Figure 1 of the drawing currently on file illustrates a "main power supply means" in the form of a diesel engine designated by reference numeral 9, which, in turn, powers an hydraulic pump designated by reference numeral 10 for driving a top hammer designated by reference numeral 11. Therefore, Figure 1 of the drawing does disclose a "main power supply means" as disclosed in the specification (See page 5, lines 21 - 24 of Applicant's specification, as originally filed).

Figure 1 also illustrates "flush medium" in the form of compressed air, as indicated by the arrows shown on Figure 1 of the drawing. Applicant's original specification, at page 5,

lines 27 - 30, states "...The compressed air flushes the drill cuttings upward through and out of the hole 2, as indicated by the upwardly directly arrows in fig 1...".

Figure 2 of the original drawings also illustrates the "computer means" described in the specification in the form of a controller designated by reference numeral 27. Applicant's original specification, at page 7, lines 9 - 10, states "...and a controller 27, such as a computer...".

In view of the above, Applicant submits that the original drawings illustrate "main power supply means", "flush medium", and "computer means", and Applicant respectfully requests that the objection to the drawing raised in the Official Action be reconsidered and withdrawn.

At page 3, paragraph 4 of the Official Action, Claims 1, 3 - 9, 11, 13 - 19 and 21 - 23 have been rejected under 35 U.S.C. Section 103(a) as being obvious over the Wilson et al patent (U.S. Pat. No. 6,637,522).

At page 5, paragraph 5 of the Official Action, Claims 2 and 12 have been rejected under 35 U.S.C. Section 103(a) as being obvious over a combination of Wilson et al in view of Edlund et al (U.S. Pat. No. 5,358,058).

At page 5, paragraph 6 of the Official Action, Claims 10 and 20 have been rejected under 35 U.S.C. Section 103(a) as being obvious over a combination of Wilson et al in view of Rodert et al (U.S. Pat. No. 5,320,189).

For the reasons discussed as follows, Applicant respectfully submits that all pending claims define patentable subject matter over the prior art applied to reject the claims in the Official Action.

Independent method Claim 1 and independent system Claim 11 are the only independent claims pending in the present application. Accordingly, for the purpose of simplifying the issues, the prior art rejections will be argued with respect to only independent method Claim 1 and independent system Claim 11. If these independent claims are allowed, the remaining dependent claims will be allowable, at least for the same reasons as their respective parent independent claims.

Independent method Claim 1, and independent system Claim 11, have been rejected as being obvious over the Wilson et al patent. The Official Action states that Wilson et al discloses a method for controlling efficiency comprising: using a controller to adjust the flushing rate at least partly as a function of depth, and controlling rotational rate and flushing rate. The Official Action further states that since Wilson et al is used to optimize the flushing rate and rotational rate, it would obviously involve

the optimization of power consumption relating to the flushing and rotational sub-processes.

Applicant respectfully disagrees with the Examiner's interpretation of the Wilson et al patent. Wilson et al discloses an arrangement for use during rock drilling, wherein the object of the disclosed arrangement is to prevent overload of the flushing mechanism. During drilling, at least one parameter of the flow of the flushing medium, such as pressure, is continuously measured, and when changes are detected, the drilling machine feed pressure (the feed rate) is automatically regulated to prevent overload. When the flushing mechanism is about to be overloaded, the feed of the drilling machine is reduced or stopped to allow the flushing mechanism to recover. The object of Wilson et al is to prevent overload from causing clogging of the flushing mechanism due to inability of removing drilling cuttings sufficiently fast enough to prevent clogging.

However, Wilson et al does not teach or suggest that the flush power is controlled, as disclosed by Applicant and specifically recited in independent Claims 1 and 11. The Wilson et al specification, at Column 4, lines 19 - 28, discloses that upper and lower thresholds of, for example, a gauge pressure in the flushing mechanism, can be varied to establish, for example, an optimum feed rate. Although these thresholds can be varied, the gauge pressure, has, however, nothing to do with the pressure of the flush medium that is used to flush a drilled hole, but

represents a "pressure build-up" that arises when the flushing mechanism is about to become overloaded. By monitoring this pressure build-up, the feed of the drilling machine can be reduced or stopped if the pressure exceeds the threshold, so as to allow the flushing mechanism to recover and thereby prevent overloading causing clogging.

Consequently, in Wilson et al, it is not the actual flush power (the power by which the flush medium is fed into the hole), that is controlled, but a counter-pressure build up that arises from clogging so that feed pressure (the feed rate) and/or the percussion pressure, can be reduced to allow the flushing mechanism to recover and return to normal flushing. According to Wilson et al, the drilling process is "optimized" in a manner in which it is not subject to undesired stops. Therefore, Wilson et al does not teach or suggest a solution in which flush power is controlled as a function of hole depth, as disclosed by Applicant and specifically recited in independent Claims 1 and 11.

In addition to the above, Wilson et al discloses that a pre-cleaner is kept open until a particular hole depth is reached. This, however, has nothing to do with controlling the flush power as a function of hole depth, but, instead, relates to control of filtering and emptying of material collected during the flushing process, the pre-cleaner being used for temporarily holding dust/cuttings. Thus, Wilson et al does not teach or suggest adjusting flush power at least partly as a function of

hole depth, as specifically taught in Applicant's specification, and positively recited in independent method Claim 1 and independent system Claim 11.

Contrary to that disclosed by Wilson et al, the invention disclosed and claimed by Applicant is directed to methods and systems for controlling power consumption in which flush power is adjusted, at least partly, as a function of the hole depth. The percussion power and/or rotational power, and the flush power, are controlled such that the total power consumption of each sub-process is controlled.

Therefore, the solution described in Wilson et al, which completely differs from the invention disclosed and claimed by Applicant, exhibits completely different advantages as compared to that of Applicant's claimed invention. Wilson et al recognizes that an overload of the flushing mechanism can be anticipated, and that drilling can be "optimized" by reducing downtime, which otherwise would be required to dismount the drill bit and clean the passages of the flushing mechanism. On the contrary, the primary objective of the invention disclosed and claimed by Applicant is to control power consumption so that only the amount of flush power presently required to be used, is the amount that is used. This means that at the beginning of a hole drilling procedure, when the hole depth is relatively small, only the amount of flush power that is required to keep the hole clean is used, which means that the remaining power is being used for

faster drilling, or in the alternative, saving power which results in, for example, less fuel consumption, less noise, and less heat. As the hole is drilled deeper, the flush power is increased to insure that the hole is still kept clean. Thus, flush power is adjusted, at least partly, as a function of the hole depth, and this feature of Applicant's invention, as well as the functional advantages directly resulting therefrom, is not taught or recognized by Wilson et al.

Applicant also notes that the present United States application is the United States National Phase of International Pat. Appl. PCT/SE2004/001758. The Wilson et al patent was extensively discussed in the International Preliminary Report On Patentability (a copy of which was filed in the present application on May 3, 2006), issued in connection with the corresponding PCT international patent application. The International Preliminary Report On Patentability concluded that the PCT claims, which correspond to the claims of the present United States application, were deemed to be allowable over the Wilson et al patent.

For the reasons discussed herein, Applicant submits that independent method Claim 1 and independent system Claim 11 are allowable over Wilson et al since these claims positively recite features (e.g., adjusting flush power at least partly as a function of hole depth; controlling flush power to control total power consumption of each sub-process) which are not taught,

suggested or recognized by Wilson et al. The remaining dependent claims, which depend directly or indirectly from one of the two independent claims, are allowable, at least for the same reasons as their respective parent independent claims. Accordingly, Applicant submits that this patent application is in condition for allowance, and favorable action is respectfully requested.

Respectfully submitted,

Mark P. Stone
Reg. No. 27,954
Attorney for Applicant
25 Third Street, 4th Floor
Stamford, CT 06905
(203) 329-3355